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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

April 3, 1990

Subject: SCRDI Bluff Road Site
Columbia, South Carolina

Dear Interested Citizen:

Please find attached a copy of a fact sheet summarizing the Feasibility Study Report for the SCRDI Bluff Road Superfund Site. As I was looking over the fact sheet, preparing to send it to you, I realized there was a confusing mistake in the section explaining the Agency's preferred alternative (page 5).

EPA has considered the alternatives presented in the Feasibility Study Report and recommends that the following alternative be selected for the SCRDI Bluff Road Site:

FOR GROUNDWATER:
(Alternative 3 in the Fact Sheet)

- Extraction of contaminated groundwater
- On-site treatment of extracted groundwater
  - Pretreatment for metals removal
  - Air stripping
- Discharge of treated groundwater via reinjection to the ground

* Groundwater clean-up will be performed until all contaminated water meets the cleanup goals established for the site

FOR SOIL:
(Alternative 7 in the fact sheet)

- Excavation of contaminated soil and lagoon sediments
- On-site thermal desorption of contaminated soil and sediments
- Backfill and revegetation of excavated area.

In addition, I would like to reemphasize that the volume of soil to be treated is estimated to be 20,000 cubic yards to 45,000 cubic yards. The cost of cleaning up the soil is dependent on the volume of soil to be treated for most alternatives. To give a conservative estimate the highest volume of soil was used to estimate the cost.

A public meeting has been scheduled for 7:30 p.m., Tuesday, April 10, 1990 in the Hopkins Park Community Center. I hope to see you there!

Sincerely,

Michelle M. Glenn

Michelle M. Glenn
Remedial Project Manager

Superfund Proposed Plan
Fact Sheet

SCRDI Bluff Road Site

Richland County, South Carolina

EPA

Region IV — *April 1990*

EPA ANNOUNCES PROPOSED PLAN

This Proposed Remedial Action Plan (Proposed Plan or PRAP) describes the alternatives that the U.S. Environmental Protection Agency (EPA) has considered for addressing potential ground-water and soil contamination at the SCRDI Bluff Road Superfund site, located in Richland County, South Carolina. The plan presents an evaluation of alternatives, including the one preferred by EPA. The alternatives summarized here are described in greater detail in the Remedial Investigation (RI) and Feasibility Study (FS) reports. The RI report characterizes the nature and extent of contamination present at the site; the FS report describes how various cleanup technologies that may address site contamination were developed, evaluated, and screened. The preferred alternative is based primarily on the RI and FS documents.

EPA's preferred alternative represents a preliminary decision, subject to public comment. Section 117 (a) of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA or Superfund) requires publication of a notice and a brief analysis of the Proposed Plan for site remediation. This Proposed Plan provides background information on the site, describes the remedial alternatives, provides the rationale for identification of the preferred alternative, and outlines the public's role in helping EPA make a final decision on a remedy.

SITE BACKGROUND

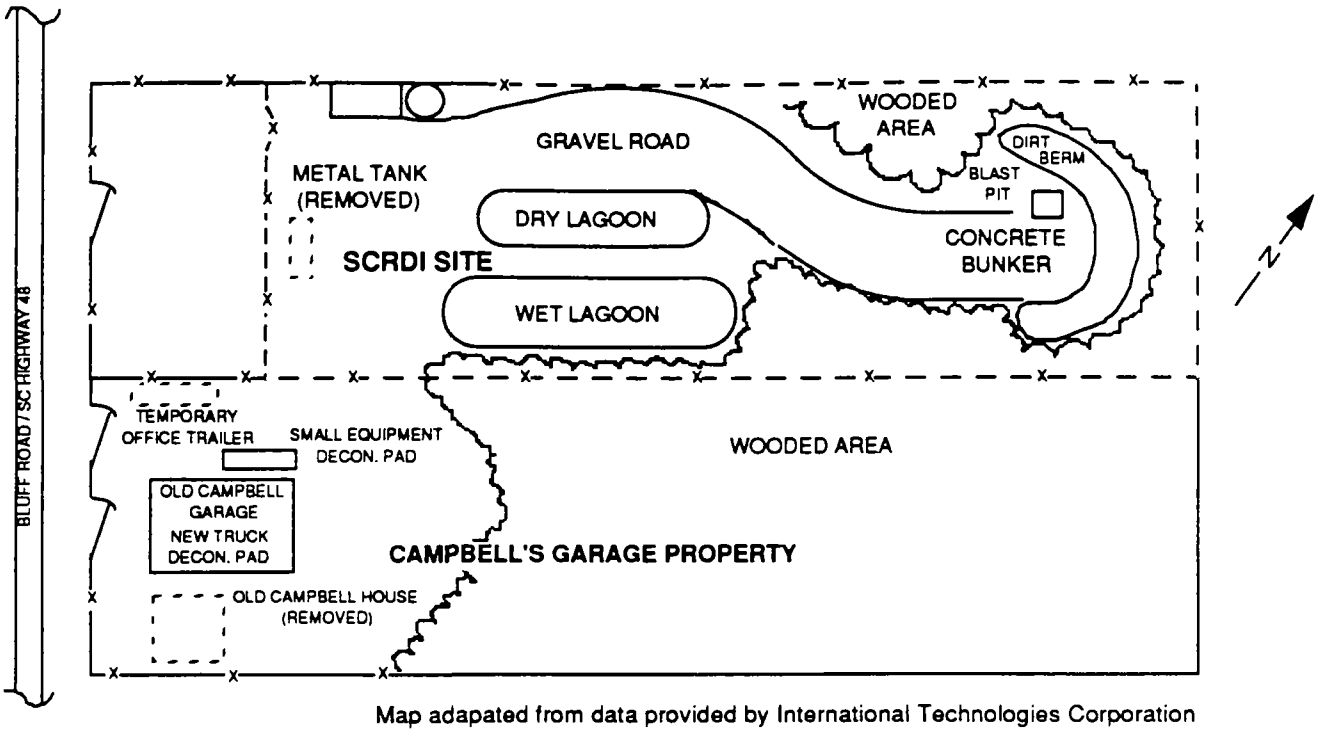
The SCRDI Bluff Road site is located in Richland County, South Carolina, and is approximately seven miles southeast of downtown Columbia, South Carolina. The site is a rectangular parcel of land covering approximately seven acres. The front portion of the site is cleared and has been used for various industrial and commercial purposes. The back portion of the site and the adjacent properties are wooded. The surrounding area is largely rural and sparsely populated. The town of Hopkins, with a population of approximately 21,000, lies within a five-mile radius of the site. Most nearby residents are supplied with municipal water, although there is a private well located one mile from the site.

The first reported use of the site was as an acetylene gas manufacturing facility. Specific dates and other details regarding the facility operations are not available. Two lagoons were constructed at the north end of the cleared area of the site to support the acetylene manufacture. The lagoon at the northeast corner of the cleared area was filled in with lime, a waste product generated in the manufacture of acetylene. This is known as the "dry" lagoon. The second lagoon contains several feet of lime sludge (a thick, heavy, mud-like mixture of solids and liquids resulting from the settling of solids from a liquid) and approximately six inches of water. This is called the "wet" lagoon. (See Figure 1.)

A site visit in March 1980 by EPA representatives revealed an estimated 7,200 drums plus numerous smaller containers of toxic, flammable, and reactive waste present on the site. Chemicals were reportedly observed leaking from the drums and into drainage ditches and disposal ponds; analysis by EPA of drainage ditch sediments indicated the presence of organic (carbon-containing) compounds, halogenated (containing fluorine, chlorine, bromine, iodine, or astatine) organics, pesticides and metals.

The site was added to EPA's National Priorities List (NPL) of hazardous waste sites identified for cleanup in October 1981. The NPL is made up of hazardous waste sites that are eligible to receive Federal funds for cleanup.

Figure 1: Bluff Road Site Diagram



Map adapated from data provided by International Technologies Corporation

In June 1982, EPA awarded a Cooperative Agreement to South Carolina to clean up the remaining surface waste and conduct a ground-water study to identify ground-water contamination. In August 1982, EPA approved $100,000 for initial remedial design activities.

A removal action that included the drums and contaminated soil was largely completed by 1983, although material adjacent to the disposal ponds (thought to be lime) and a large, above-ground tank remained on site. An area toward the rear of the site, referred to as the demolition area, was cleared and used for detonation of shock-sensitive materials during the surface removal.

In 1984, the South Carolina Department of Health and Environmental Control (SCDHEC) began a Remedial Investigation/Feasibility Study (RI/FS) to determine the type, extent, and degree of soil and ground-water contamination on and around the site. The RI was never completed, however, due to lack of funding to support scope of work changes.

In 1986, the site switched from State to Federal lead when South Carolina agreed to turn the site over to EPA; the 1982 Cooperative Agreement was terminated. This allowed EPA to enter into negotiations with several of the Potentially Responsible Parties (PRPs), or those who contributed to the contamination problem, for completion of the RI/FS.

In 1987, EPA retained a contractor to review SCDHEC's draft RI report and define data gaps that needed to be filled. EPA retained another contractor in September 1987 to develop an RI/FS Work Plan and Field Operations Plan.

As a result of negotiations with PRPs, EPA entered into an Administrative Order on Consent, a legal and enforceable agreement signed by PRPs and EPA through which the PRPs agree to perform or pay the cost of site cleanup. This Consent Order provided that the RI/FS would be financed and conducted by the PRPs that entered into the Order with EPA and that the same PRPs are jointly and severally liable for 51.96 percent of the Remedial Design/Remedial Action costs.

The RI/FS began in late August 1988 and was completed in December 1989. As part of the RI, the above-ground tank that contained approximately 100 gallons of sludge was removed. The sludge was removed from the tank and destroyed off site, and the tank was cut up and disposed of by burial off site.

REMEDIAL INVESTIGATION SUMMARY

The RI involved sampling of the soil, surface waters, sediments, ground water, and air to define the character and extent of contamination at the site.

- Lagoons and soils on the SCRDI site are source areas contributing volatile organics (carbon-containing compounds that vaporize easily) to the shallow or surficial aquifer (a layer of rock or soil below the ground surface that is capable of producing useable quantities of ground water). A contaminant plume (the zone within the aquifer that contains ground water contamination) approximately 1,000 feet wide has moved southeast from the SCRDI site and extends approximately 2,200 feet from the eastern edge of the wet lagoon. The plume apparently has not moved from its December 1985 position. No other off-site sources were found to contribute to the surficial ground-water contamination.

- Four deep wells (75 to 100 feet) were installed in the deep aquifer to check for contamination and determine the direction of ground-water flow. No contamination was found in any of these wells. Ground-water flow is toward Bluff Road.

- In the SCDHEC drum staging areas, the contamination is limited to the top three feet of soil. Contamination in that area is reportedly due to spills and leaks from drums during removal activities. The SCRDI property itself is contaminated with organics in the top seven feet from Bluff Road to the wet lagoon area. Metals, polychlorinated biphenyls (PCBs), and pesticide contamination appear to be localized on the site. PCBs are a family of organic compounds used from 1926 to 1979 as insulators and coolants in lubricants.

- Sediments from both lagoons on the SCRDI property are contaminated with a variety of organic chemicals and metals. Water in the wet lagoon is contaminated with metals, although no organic chemicals were found. No significant contamination was found in either the surface water drainage system from the site or in the air samples collected on the site during the field investigation.

REMEDIAL ACTION OBJECTIVES

Studies performed as part of the RI indicate that only ground-water contamination may directly adversely affect human health or the environment. Although the upper contaminated aquifer is not currently used as a drinking water source, it is possible that it may be used this way in the future. In order to prevent further contamination of the aquifer, soil contamination will be addressed. For these reasons, the remedial actions selected for the site will satisfy the following primary objectives:

- Prevent the possible consumption of water containing contaminants at levels in excess of applicable or relevant and appropriate requirements (ARARs), or the Federal and State requirements that a remedy that EPA selects must attain.

- Reduce contaminant concentrations in the upper aquifer to identified ARARs.

- Minimize expansion of the area of contamination in the upper aquifer.

- Minimize the risk of contaminating the deep aquifer.

- Reduce or eliminate the contaminated soil, which is the existing ground-water contaminant source.

Each of the alternatives considered for the action at the site was evaluated against these objectives.

SUMMARY OF REMEDIAL ALTERNATIVES

The following alternatives to address ground-water and soil contamination were evaluated in the FS report:

1. No Action

<u>Ground-Water Treatments</u>

2. Carbon Adsorption

3. Air Stripping

4. Effluent Discharge Alternatives

Soil Treatments

5. In-situ Soil Venting
6. Incineration
7. Thermal Desorption
8. Soil Excavation and Off-site Disposal
9. Soil Excavation and Off-site Thermal Treatment

The remedial alternative may be one of these or any combination.

Alternative 1: No Action

The Superfund program requires that a "no-action" alternative be considered at every site to provide a basis for comparing existing site conditions with those that would result from implementing the other proposed alternatives. Under the no-action alternative, no measures would be taken to address ground-water or soil contamination, although institutional controls would be implemented. The existing fencing would be maintained and warning signs would be placed along the outside of the fence. Deed restrictions for properties surrounding the site would limit the use of upper aquifer ground water as a drinking water source. In addition, ground-water sampling and analysis would be conducted to monitor the movement of ground-water contamination and assess the effect of soil contamination on ground water.

Yearly costs of Alternative 1 are estimated to be $40,000. Present worth of these costs over a 30-year time frame is $760,000.

Alternative 2: Carbon Adsorption

This alternative involves using a ground-water collection and carbon adsorption treatment. The system would entail construction of one or more deep extraction wells to collect contaminated ground water. Collected ground water would then be pumped through a filter to remove suspended solids or oil droplets in the water. Following this preliminary filtration step, the ground water would be treated by carbon adsorption, which uses granular activated carbon (GAC) to remove organic contaminants found in the water. GAC is a highly adsorbent powder or granulated carbon used chiefly for purifying liquids and gases.

The present worth cost of the carbon adsorption alternative, based on a 16-year treatment, would be approximately $15,960,000. This includes a capital cost (for materials, equipment, labor, and permits) of $1,390,000 and yearly maintenance costs of $1,343,750.

Alternative 3: Air Stripping

For this alternative, contaminated ground water would be extracted or removed from the upper aquifer using wells and would be treated by air stripping. Air stripping is a process in which air is forced through contaminated water causing volatile organic compounds to evaporate. Organic compounds would be treated with a carbon adsorption treatment, described in Alternative 2. Recovery wells would be placed in the most highly contaminated part of the plume for rapid removal of organics and at the edge of the plume. The wells at the plume edge would be used to limit expansion of the plume.

Capital costs for this alternative are estimated at $1,013,000. Operating costs would total $298,000 per year. The present worth cost, based on a 16-year treatment system, is $4,243,000.

Alternative 4: Effluent Discharge Alternatives

Any extraction and treatment of ground water will require discharge of treated water or effluent to some location. The options that have been evaluated are as follows:

- Injection into the subsurface
- Discharge to the Columbia, SC Publicly Owned Treatment Works (POTW)
- Discharge into Myers Creek
- Discharge into the Congaree River
- Spray irrigation into the wetland area.

Each of the options is described in detail in the FS report.

Alternative 5: In-situ Soil Venting

Soil venting is an in-situ (in the natural or original position) treatment process. The process would use a network of air withdrawal or vacuum wells to create a vacuum on underground soils. The subsurface vacuum causes volatile organic compounds to evaporate. Vaporized compounds and underground air move rapidly toward the withdrawal wells, essentially air stripping (see Alternative 2) the soils in-place.

The estimated total cost for the soil venting system would be approximately $1,070,000. This capital cost

includes the anticipated operation expenditures because this remedial action is not expected to last more than 2 years.

Alternative 6: Incineration

This alternative would consist of excavating and treating contaminated soils on-site using high temperature incineration. Approximately 20,000 to 45,000 cubic yards of soil are estimated to need treatment. The cost estimates for all the alternatives are based on 45,000 cubic yards of soil to provide the highest potential costs associated with excavation and treatment. This soil would be heated to 1200 to 1500 degrees Fahrenheit. The intense heat would destroy the organic compounds. After processing, the treated soil would be discharged from the kiln into a mill where water would be added to it. The treated soil would be returned to the site.

The estimated total cost (based on 45,000 cubic yards of soil) for this alternative is $28,260,000. A present worth analysis has not been performed due to the short implementation period associated with incineration.

Alternative 7: Thermal Desorption

This alternative consists of excavating the site soils and treating the soils on-site using low temperature thermal desorption. This system uses a rotating kiln with soil lifters inside the kiln to mechanically agitate the soil and improve heat transfer. The soil would be heated to approximately 600 degrees Fahrenheit. The rotating kiln and lifters serve to mix, convey, and agitate the contaminated soil, allowing the moisture and organic compounds to vaporize and escape from the soil. After the process, the soil would be discharged from the kiln into a mill where water would be added to it to reduce dusting problems. The treated soil would then be returned to the site.

The estimated cost of this alternative (based on 45,000 cubic yards of soil) is $18,250,000. Due to the short implementation time of the process, a present worth analysis has not been performed for this alternative.

Alternative 8: Soil Excavation and Off-site Disposal

This alternative consists of excavating the contaminated site soils and transporting them to an off-site landfill for disposal. Prior to excavation, supplementary soil sampling would be performed to assess the volume of soil above the target cleanup levels. Approximately 20,000 to 45,000 cubic yards of soil are estimated to be above the target cleanup levels at the site. The cost estimates for all the alternatives are based on 45,000 cubic yards of soil to provide the highest potential costs associated with excavation and treatment.

The estimated total cost for this alternative (based on 45,000 cubic yards of soil) is $20,700,000. Due to the relatively short implementation period associated with this action, a present worth analysis was not performed.

Alternative 9: Soil Excavation and Off-site Thermal Desorption

This alternative consists of excavating the site soils that are above target cleanup levels and transporting them to an off-site incinerator for treatment and disposal. Prior to excavation, supplementary soil sampling would be performed to assess the volume of soil above the target cleanup levels. Approximately 20,000 to 45,000 cubic yards of soil are estimated to be above the target cleanup levels at the site. The cost estimates for all the alternatives are based on 45,000 cubic yards of soil to provide the highest potential costs associated with excavation and treatment.

The estimated cost of this alternative (based on 45,000 cubic yards) is $100,100,000. A present worth analysis was not performed.

PREFERRED ALTERNATIVE AND RATIONALE FOR SELECTION

After careful consideration of the alternatives, EPA recommends that Alternative 3, Carbon Adsorption and Alternative 7, Thermal Desorption, be implemented. Combining these treatments results in a remedial alternative that addresses both the contaminated ground water and the contaminated soil at the site. Extracted ground water will be treated to safe levels and then reinjected into the ground. Based on available information, this combination of alternatives provides the best balance among the nine criteria that EPA uses to evaluate remedial alternatives. The Glossary of Evaluation Criteria defines the criteria, while Table 1 compares the alternatives under consideration at the SCRDI Bluff Road site.

THE COMMUNITY'S ROLE IN THE SELECTION PROCESS

EPA relies on public comments to ensure that the remedial alternatives being evaluated and selected for each Superfund site are fully understood and that the concerns of the local community have been considered. EPA has set a public comment period from April 10 to May 10, 1990 to encourage public participation in the selection process. The comment period includes a public meeting at which EPA will present the FS report and Proposed Plan, answer questions, and receive both oral and written comments. The public meeting is

scheduled to be held at 7:30 p.m., Tuesday, April 10, 1990 at the Hopkins Park Community Center, County Road 37. Comments will be summarized and responses provided in the Responsiveness Summary section of the Record of Decision (ROD). The ROD is the document that presents EPA's final selection for cleanup. The public can send written comments to or obtain further information from:

Michelle Glenn
Remedial Project Manager
U.S. EPA Region IV
345 Courtland Street, NE
Atlanta, Georgia 30365
(404) 347-7791

Beverly Mosely
Community Relations Coordinator
345 Courtland Street, NE
Atlanta, Georgia 30365
(404) 347-3004

EPA is soliciting public comments about the most acceptable way to clean up the SCRDI Bluff Road site. The Proposed Plan and RI/FS reports have been placed in the Information Repository and Administrative Record for the site. The Administrative Record includes documents such as work plans, data analyses, public comments, transcripts, and other relevant material used in developing the remedial alternatives for the site. These documents are available for public review and copying at:

Richland County Library
Landmark Square Branch
Landmark Square Shopping Center
6863 Garners Ferry Road
Columbia, South Carolina 29209
(803) 776-0855

GLOSSARY OF EVALUATION CRITERIA

Overall Protection of Human Health and the Environment addresses whether a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other environmental statutes and/or provide grounds for invoking a waiver.

Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

Reduction of toxicity, mobility, or volume is the anticipated performance of the treatment technologies a remedy may employ.

Short-term effectiveness involves the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost includes capital and operation and maintenance costs.

State Acceptance indicates whether, based on its review of the RI/FS and the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

Community Acceptance will be assessed in the Record of Decision following a review of the public comments received on the RI/FS Reports and the Proposed Plan.

Table 1
SCRD-Bluff Road Site
Feasibility Study Detailed Analysis Summary

Remedial Alternatives	Evaluation Criteria: Short-Term Effective	Long-Term Effective	Reduction of Toxicity, Mobility, Volume	Implementable	ARARS	Overall Protection of Human Health and the Environment	Cost
No Action	No	No	No reduction of toxicity, mobility or volume	Yes	Does not meet	No	$ 760,000
Ground Water Treatments							
Carbon Adsorption	Yes	Yes	Reduction of toxicity, mobility and volume	Yes	Meets or exceeds	Yes	$ 15,960,000
Air Stripping	Yes	Yes	Reduction of toxicity, mobility and volume	Yes	Meets or exceeds	Yes	$ 4,243,000
Soil Treatments							
In-situ Soil Venting	Yes	Yes	Reduction of toxicity, mobility and volume	Yes	Meets or exceeds	Yes	$ 1,070,000
Incineration	Yes	Yes	Reduction of toxicity, mobility and volume	Yes	Meets or exceeds	Yes	$ 28,260,000
Thermal Desorption	Yes	Yes	Reduction of toxicity, mobility and volume	Yes	Meets or exceeds	Yes	$ 18,250,000
Soil Excavation and Off-site Disposal	Yes	Yes	Reduction of toxicity, mobility and volume	Yes	Meets or exceeds	Yes	$ 20,700,000
Soil Excavation and Off-site Thermal Treatment	Yes	Yes	Reduction of toxicity, mobility and volume	Yes	Meets or exceeds	Yes	$100,100,000

MAILING LIST ADDITIONS

To be placed on the mailing list for the SCRDI Bluff Road Site
please complete this form and mail to:
Beverly Mosely
Community Relations Coordinator, U.S. EPA, Region IV
345 Courtland Street, N.E., Atlanta, GA 30365

Name _____
Address _____
Affiliation _____
Telephone _____

13 9 0015

United States
Environmental Protection Agency

Region 4
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$300